

## Claims

- [c1] What is claimed is:
- 1.A multi-channel wireless audio system comprising:
    - a sound card for a computer, the sound card comprising:
      - a signal broadcasting circuit having a first transceiver for wirelessly transmitting digital audio signals to external speakers;
      - a sound chip electrically connected to the signal broadcasting circuit for processing audio signals sent to the signal broadcasting circuit; and
      - an interface connection for connecting the sound card to the computer; and
    - a plurality of wireless speaker modules each comprising:
      - a second transceiver for receiving the wireless digital audio signals from the signal broadcasting circuit;
      - a digital to analog converter for converting the digital audio signals into analog audio signals;
      - an amplifier for amplifying the analog audio signals; and
      - a speaker for converting the amplified analog audio signals into sound.
  - [c2] 2.The audio system of claim 1 wherein the signal broadcasting circuit further comprises a multiplexer having a plurality of input nodes and one output node, each input node being used to receive audio signals of an audio channel from the sound chip, the output node being used for outputting audio signals of a selected audio channel, and an analog to digital converter for converting the audio signals of the selected audio channel into digital audio signals.
  - [c3] 3.The audio system of claim 1 wherein the signal broadcasting circuit further comprises a packaging and compressing circuit for compressing the digital audio signals outputted from the analog to digital converter and dividing the signals into packages before wireless transmission by the first transceiver.
  - [c4] 4. The audio system of claim 1 wherein the signal broadcasting circuit further comprises a sampling and control circuit for controlling operation of the multiplexer and the analog to digital converter.
  - [c5] 5. The audio system of claim 1 wherein each wireless speaker module further comprises a processor for controlling operation of the wireless speaker module.

- [c6] 6.The audio system of claim 5 wherein each wireless speaker module further comprises a channel selector for identifying a selected audio channel, and the processor of the wireless speaker module processes only those digital audio signals corresponding to the selected audio channel.
- [c7] 7.The audio system of claim 5 wherein each wireless speaker module further comprises a diagnostic circuit for detecting performance problems in the amplifier and the speaker, and for notifying the processor of any problems.
- [c8] 8.The audio system of claim 1 wherein each wireless speaker module further comprises a timing control circuit for controlling timing of the digital to analog converter.
- [c9] 9.The audio system of claim 1 wherein the wireless digital signals transmitted from the signal broadcasting circuit to the plurality of wireless speaker modules are direct sequence spread spectrum signals and conform to the IEEE 802.11b networking standard.
- [c10] 10.The audio system of claim 1 wherein the sound chip of the sound card comprises a joystick input port for receiving control signals from a joystick and a microphone input port for receiving audio signals from a microphone.
- [c11] 11.A multi-channel wireless audio system comprising:  
a sound card for a computer, the sound card comprising:  
a signal broadcasting circuit having a first transceiver for wirelessly transmitting digital audio signals to external speakers;  
a sound chip electrically connected to the signal broadcasting circuit for processing audio signals sent to the signal broadcasting circuit; and  
an interface connection for connecting the sound card to the computer; and  
at least one multi-channel wireless speaker module comprising:  
a second transceiver for receiving the wireless digital audio signals from the signal broadcasting circuit;  
a plurality of digital to analog converters for converting digital audio signals into analog audio signals;  
a plurality of amplifiers for amplifying the analog audio signals; and

a plurality of speakers for converting the amplified analog audio signals into sound.

[c12] 12.The audio system of claim 11 wherein the signal broadcasting circuit further comprises a multiplexer having a plurality of input nodes and one output node, each input node being used to receive audio signals of an audio channel from the sound chip, the output node being used for outputting audio signals of a selected audio channel, and an analog to digital converter for converting the audio signals of the selected audio channel into digital audio signals.

[c13] 13.The audio system of claim 11 wherein the signal broadcasting circuit further comprises a packaging and compressing circuit for compressing the digital audio signals outputted from the analog to digital converter and dividing the signals into packages before wireless transmission by the first transceiver.

[c14] 14.The audio system of claim 11 wherein the signal broadcasting circuit further comprises a sampling and control circuit for controlling operation of the multiplexer and the analog to digital converter.

[c15] 15.The audio system of claim 11 wherein each wireless speaker module further comprises a processor for controlling operation of the wireless speaker module.

[c16] 16.The audio system of claim 15 wherein each wireless speaker module further comprises a channel selector for identifying a plurality of selected audio channels, and the processor of the wireless speaker module processes only those digital audio signals corresponding to the selected audio channels.

[c17] 17.The audio system of claim 15 wherein each wireless speaker module further comprises a diagnostic circuit for detecting performance problems in the amplifiers and the speakers, and for notifying the processor of any problems.

[c18] 18.The audio system of claim 11 wherein the wireless digital signals transmitted from the signal broadcasting circuit to the plurality of wireless speaker modules are direct sequence spread spectrum signals and conform to the IEEE 802.11b networking standard.

[c19] 19.The audio system of claim 11 wherein the sound chip of the sound card

comprises a joystick input port for receiving control signals from a joystick and a microphone input port for receiving audio signals from a microphone.

[c20]

20.A multi-channel wireless audio system comprising:

a sound card for a computer, the sound card comprising:

a signal broadcasting circuit comprising:

a first transceiver for wirelessly transmitting digital audio signals to external speakers;

a multiplexer having a plurality of input nodes and one output node, each input node being used to receive audio signals of an audio channel from the sound chip, the output node being used for outputting audio signals of a selected audio channel; and

an analog to digital converter for converting the audio signals of the selected audio channel into digital audio signals;

a sound chip electrically connected to the signal broadcasting circuit for processing audio signals sent to the signal broadcasting circuit; and

an interface connection for connecting the sound card to the computer; and

a plurality of wireless speaker modules comprising:

a second transceiver for receiving the wireless digital audio signals from the signal broadcasting circuit;

a digital to analog converter for converting the digital audio signals into analog audio signals;

an amplifier for amplifying the analog audio signals; and

a speaker for converting the amplified analog audio signals into sound.